

IN THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 3B. This sheet, which includes Fig. 3B, replaces the original sheet including Fig. 3B.

Attachment: Replacement Sheet

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 19-36 are currently pending. Claims 19, 21, 22, and 32 have been amended; and Claims 33-36 have been added by the present amendment. The changes and additions to the claims are supported by the originally filed specification and do not add new matter.

In the outstanding Office Action, the Drawings were objected to as failing to comply with 37 C.F.R. § 1.84(p)(5) as containing reference characters shown in the Drawings, but not described in the specification; the Drawings were objected to under 37 C.F.R. § 1.83(a) regarding the second and third post-oxidation films; Claim 21 was objected to regarding a minor informality regarding the word “atom”; Claims 19-32 were rejected under 35 U.S.C. § 112, second paragraph, regarding the second and third post-oxidation films and the hydrogen limitation recited in Claims 22 and 32; Claims 19 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,449,634 to Inoue (hereinafter “the ‘634 patent”) in view of U.S. Patent No. 5,348,904 to Koyama (hereinafter “the ‘904 patent”) and U.S. Patent No. 5,786,638 to Yamaha (hereinafter “the ‘638 patent”); Claims 21, 22, and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘634, ‘904, and ‘638 patents, further in view of U.S. Patent No. 5,670,431 to Huanga et al. (hereinafter “the 431 patent”); Claims 23 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘634, ‘904, and ‘638 patents, further in view of U.S. Patent No. 6,472,684 to Yamazaki et al. (hereinafter “the ‘684 patent”); Claims 25 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘634, ‘904, ‘638, and ‘684 patents, further in view of U.S. Patent No. 6,162,682 to Kleine (hereinafter “the ‘682 patent”); and Claims 27-31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘634, ‘904, and

‘638 patents, further in view of U.S. Patent No. 5,677,556 to Endoh (hereinafter ‘556 patent”).

Applicants respectfully submit that the objection to the Drawings under 37 C.F.R. § 1.84 is rendered moot by the present amendment to Fig. 3B. Fig. 3B has been amended to label element 39 as element 39b.

Applicants respectfully submit that the objection to the Drawings under 37 C.F.R. § 1.83 is rendered moot by the present amendment to the claims. The claims have been amended to no longer recite the second and third post oxidation films.

Applicants respectfully submit that the objection to Claim 21 is rendered moot by the present amendment to that claim. Claim 21 has been amended to make the word “atom” plural.

Applicants respectfully submit that the rejections of the claims under 35 U.S.C. § 112, second paragraph, are rendered moot by the present amendment to the claims. The claims have been amended to no longer recite second and third post-oxidation films. Further, Claims 22 and 32 have been amended to clarify that the concentration of the hydrogen is more reduced at the surface of the silicone nitride film than at regions underneath the surface of the silicone nitride. Accordingly, the rejections of the claims under 35 U.S.C. § 112 are believed to have been overcome.

Amended Claim 19 is directed to a nonvolatile semiconductor memory device, comprising: (1) a semiconductor substrate having a peripheral circuit region and a memory cell region; (2) a plurality of erasable and programmable memory cell transistors each having a gate electrode and provided in the memory cell region; (3) a selection transistor having a gate electrode and provided in the memory cell region; (4) a peripheral transistor having a gate electrode and provided in the peripheral circuit region; (5) post-oxidation films each provided on the gate electrode of all of the plurality of erasable and programmable memory

cell transistors, the gate electrode of the selection transistor, and the gate electrode of the peripheral transistor; and (6) an insulating film covering the plurality of erasable and programmable memory cell transistors, the selection transistor, and the peripheral transistor, then insulating film being harder for an oxidizing agent to pass therethrough than a silicon oxide film, the insulating film having an oxidized region, and the insulating film covering a side surface of the gate electrode of the selection transistor along the gate electrode of the selection transistor.

Further, Claim 19 recites that the insulating film comprises a silicon nitride film, and the oxidized region is provided in a surface of the silicon nitride film. Claim 19 has been amended to clarify the post-oxidation films and the insulating film. The changes to Claim 19 are supported by the originally filed specification and do not add new matter.¹

Regarding the rejection of Claim 19 under 35 U.S.C. § 103, the Office Action asserts that the '634 patent discloses everything in Claim 19 with the exception of the post-oxidation films and the insulating film, and relies on the '904 and '634 patents to remedy those deficiencies.

Applicants respectfully submit that the rejection of Claim 19 (and dependent Claim 20) is rendered moot by the present amendment to Claim 19.

The '634 patent is directed to method of fabricating a nonvolatile semiconductor memory device having a nonvolatile memory transistor and a peripheral transistor. However, as admitted in the Office Action, the '634 patent fails to disclose the post-oxidation films and the insulating film recited in amended Claim 19. In particular, Applicants submit that the '624 patent fails to disclose post-oxidation films each provided on (1) the gate electrode of all of the plurality of erasable and programmable memory cell transistors, (2) the gate electrode of the selection transistor, and (3) the gate electrode of the peripheral transistor, as recited in

¹ See, e.g., Fig. 13 and the discussion related thereto in the specification.

amended Claim 19. Further, Applicants respectfully submit that the '624 patent fails to disclose an insulating film covering the plurality of erasable programmable memory cell transistors, the selection transistor, and the peripheral transistor, wherein the insulating film covers a side surface of the gate electrode of the selection transistor along the gate electrode of the selection transistor, as recited in amended Claim 19.

The '904 patent is directed to a method of fabricating a semiconductor memory device having an improved substrate structure. In particular, the '904 patent discloses a silicon oxide film 14 formed using CVD to cover gate electrodes 12, thus serving as an interlayer insulator. Thus, the interlayer insulator 14 insulates gate electrode 12 from bottom electrode 15. However, Applicants respectfully submit that the '904 patent fails to disclose post-oxidation films each provided on the gate electrode of all of the plurality of erasable and memory cell transistors, the gate electrode of the selection transistor, and the gate electrode of the peripheral transistor, as recited in amended Claim 19. Further, as admitted in the Office Action, the '904 patent fails to disclose the insulating film recited in amended Claim 19.

The '638 patent is directed to a semiconductor device having a moisture impervious film formed under an interlayer insulating film, covering the active region of an IC chip. As shown in Fig. 1, the '638 patent discloses a moisture impervious film 24 made of silicon nitride film, which is covered by a silicon oxide film 18(a) formed by plasma CVD. However, Applicants respectfully submit that the '638 patent fails to disclose an insulating film covering the plurality of erasable and programmable memory cell transistors, the selection transistor, and the peripheral transistor, wherein the insulating film comprises a silicon nitride film having an oxidized region provided in the surface of the silicon nitride film, as recited in amended Claim 19. The silicon nitride film 24 disclosed by the '638 patent does not have an oxidized region. Applicants submit that the separate silicon oxide film 18(a) does not qualify as an oxidized region of the silicon nitride film 24. Further, Applicants

respectfully submit that the '638 patent fails to disclose that the insulating film covers a side surface of the gate electrode of the selection transistor along the gate electrode of the selection transistor. Rather, the '638 patent discloses that the silicon nitride film 24 covers the upper part of the transistors, including being formed on wiring layers 16(s) and 16(d) that are formed above gate electrode 13(d). Moreover, Applicants respectfully submit that the '638 patent fails to disclose the post-oxidation films recited in amended Claim 19.

Thus, no matter how the teachings of the '634, '904, and '638 patents are combined, the combination does not teach or suggest the post-oxidation films and the insulating film recited in amended Claim 19. Accordingly, Applicants respectfully submit that amended Claim 19 (and dependent Claim 20) patentably defines over any proper combination of the '634, '904, and '638 patents.

Regarding the rejection of dependent Claims 21-31 under 35 U.S.C. § 103, Applicants respectfully submit that the '431, '684, '682, and '556 patents fail to remedy the deficiencies of the '632, '904, and '638 patents, as discussed above. Accordingly, Applicants respectfully submit that the rejections of dependent Claims 21-31 are rendered moot by the present amendment to Claim 19.

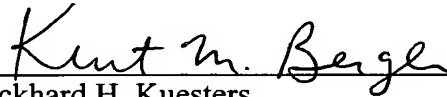
Claim 32 recites limitations analogous to the limitations recited in Claim 19. Moreover, Claim 32 has been amended in a manner analogous to the amendment to Claim 19. Further, Applicants respectfully submit that the '431 patent fails to remedy the deficiencies of the '634, '904, and '638 patents, as discussed above. Accordingly, Applicants respectfully submit that the rejection of Claim 32 is rendered moot by the present amendment to Claim 32. Thus, for the reasons stated above, Applicants respectfully submit that amended Claim 32 patentably defines over and proper combination of the '634, '904, '638, and '431 patents.

The present amendment also sets forth new dependent Claims 33-36 for examination on the merits. New Claims 33-36 are supported by the originally filed specification and do not add new matter. See, e.g., Figs. 9A and 9B of the originally filed specification. Further, based on the asserted allowability of Claims 19 and 32, Applicants respectfully submit that new Claims 33-36 patentably define over any proper combination of the '634, '904, '638, '431, '684, '682, and '556 patents.

Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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